Appendix A

09/136,483

WHAT IS CLAIMED IS:

1. A collection of particles comprising aluminum oxide, the collection of particles having an average diameter of primary particles from about 5 nm to about 500 nm and less than about one in 10^6 particles have a diameter greater than about three times the average diameter of the collection of particles.

2. The collection of particles of claim 1 wherein the collection of particles have an average diameter from about 5 nm to about 25 nm.

3. The collection of particles of claim 1 wherein the aluminum oxide has a crystalline structure of γ-Al_2O_3.

5. The collection of particles of claim 1 wherein the collection of particles includes less than about one in 10^6 particles with a diameter greater than about two times the average diameter.

6. The collection of particles of claim 1 wherein the collection of particles have a distribution of particle sizes such that at least about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.

7. The collection of particles of claim 1 wherein the collection of particles have a distribution of particle sizes such that at least about 95 percent of the particles have a diameter greater than about 60 percent of the average diameter and less than about 140 percent of the average diameter.

8. The collection of particles of claim 1 wherein the collection of particles have a distribution of particle sizes such that at least about 99 percent of the particles have a diameter

greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.

9. A polishing composition comprising a dispersion of aluminum oxide particles of claim 1.

10. The polishing composition of claim 9 wherein the aluminum oxide has a crystalline structure of γ-Al_2O_3.

11. The polishing composition of claim 9 wherein the polishing composition comprises from about 0.05 percent by weight to about 15 percent by weight aluminum oxide particles.

12. The polishing composition of claim 9 wherein the polishing composition comprises from about 1.0 percent by weight to about 10 percent by weight aluminum oxide particles.

13. The polishing composition of claim 9 wherein the dispersion is an aqueous dispersion.

14. The polishing composition of claim 9 wherein the dispersion is a nonaqueous dispersion.

15. The polishing composition of claim 9 further comprising abrasive particles comprising silicon carbide, metal oxides other than aluminum oxide, metal sulfides or metal carbides.

16. The polishing composition of claim 9 further comprising colloidal silica.

17. A method for producing a collection of aluminum oxide particles having an average diameter from about 5 nm to about 500 nm, the method comprising:

flowing a molecular stream through a reaction chamber, the molecular stream comprising an aluminum precursor, an oxidizing agent, and an infrared absorber; and

pyrolyzing the flowing molecular stream in a reaction chamber, where the pyrolysis is driven by heat absorbed from a continuous wave laser beam.

18. The method of claim 17 wherein the aluminum oxide particles have an average diameter from about 5 nm to about 100 nm.

19. A collection of particles comprising aluminum oxide, the collection of particles having an average diameter from about 5 nm to about 500 nm and a distribution of particle sizes such that at least about 95 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.

20. The collection of particles of claim 19 wherein the aluminum oxide has a crystalline structure of γ-Al_2O_3.

21. The collection of particles of claim 19 wherein the collection of particles have a distribution of particle sizes such that at least about 99 percent of the particles have a diameter greater than about 40 percent of the average diameter and less than about 160 percent of the average diameter.

22. The collection of particles of claim 19 wherein the collection of particles have a distribution of particle sizes such that at least about 95 percent of the particles have a diameter greater than about 60 percent of the average diameter and less than about 140 percent of the average diameter.